

REMARKS***Summary of the Response***

By the present response, claims 12 and 22 have been amended and new claims 33 and 34 have been presented for the Examiner's consideration. Applicant submits that no new matter is added by the present amendment. Support for the amendment may be found, for example, at least in Figures 1A – 2D. Accordingly, upon entry of the amendment, claims 12 – 34 will be pending. Reconsideration of the rejected claims in view of the above amendment and following remarks is respectfully requested.

Summary of the Office Action

In the instant Office Action, the Examiner has rejected claims 12 – 32 over the art of record. By the present amendment and remarks, Applicant submits that the rejections have been overcome, and respectfully requests reconsideration of the outstanding Office Action and allowance of the present application.

Restriction Requirement

Applicant acknowledges that the Election of Species requirement dated July 9, 2009 has been withdrawn.

Traversal of Drawing Objections

The Examiner has objected to the drawings for being of poor quality. By the present amendment, Applicant has presented amended drawings to address the Examiner's objection.

Accordingly, Applicant requests the objection to the drawings be withdrawn and that the Examiner confirm the drawings are acceptable.

Traversal of Claim Objections

The Examiner has objected to claims 12 – 32 for reciting “bores arranged coaxially to the first outlet opening.” By the present amendment, Applicant has amended claims 12 and 22 to address the Examiner’s claim objection. Accordingly, Applicant requests the objection to claims 12 – 32 be withdrawn.

Additionally, the Examiner has objected to claim 19 for reciting both “bores” and “component feed bores,” which are distinct elements. The Examiner asserts these bores “should be identified separately.” However, as Applicant has been consistent with the use of these terms in the pending claims, Applicant respectfully disagrees with the Examiner’s position that the recited “bores” need an additional adjective. In particular, Applicants and respectfully notes that one of skill in the art, upon reading the instant specification, would readily understand that the recited “bores” and “component feed bores” are different elements of the present invention. Accordingly, Applicant respectfully requests the objection to claim 19 be withdrawn.

Traversal of Rejection Under 35 U.S.C. § 102(b)

Applicant traverses the rejection of claims 12 – 19, 21 – 25 and 27 - 32 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,703,259 issued to Sturgess et al. [hereinafter STURGESS]. The rejection is respectfully traversed.

Independent Claims 12 and 22

The present invention relates to an injection element.. Independent claim 12 recites, in pertinent part:

. . . an inner element with a first outlet opening;
an outer element, comprising:
at least one second outlet opening structured and arranged for receiving and injecting fuel in a combustion space, and arranged coaxially to the first outlet opening; and
third outlet openings radially beyond the at least one second outlet opening composed of bores structured and arranged for forming a cooling liquid film layer, wherein the bores are arranged along a ring, which is coaxial to the first outlet opening and the at least one second outlet opening.

Independent claim 22 recites, in pertinent part:

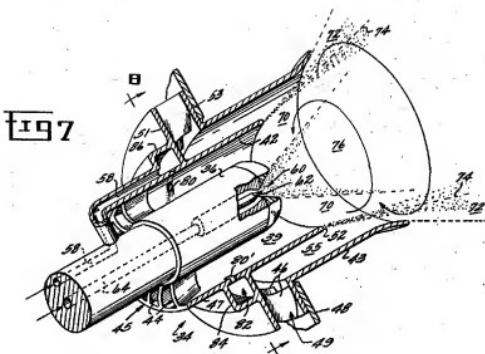
. . . an inner element comprising a first outlet opening;
an outer element with at least one second outlet opening structured and arranged for receiving and injecting fuel in a combustion space, and arranged coaxially to the first outlet opening;
the inner element further comprising third outlet openings composed of bores structured and arranged for forming a cooling liquid film layer, wherein the bores are arranged along a ring, which is coaxial to the first outlet opening and the at least one second outlet opening to surround the first outlet opening.

In addressing previously presented claims 12 and 22, the Examiner asserted STURGESSION disclosed each of the features of these previously presented claims. While Applicant does not agree with the Examiner that the applied art under 35 U.S.C. §102(b) anticipates the embodiments of the invention recited in at least claims 12 and 22, in an effort to advance prosecution, claims 12 and 22 have been amended to even more clearly define the features of the present invention. Further, Applicant expressly reserves the right to refile the subject of independent claim 12 and 22 as presented prior to this amendment in one or more continuing applications.

To anticipate a claim, each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference. MPEP § 2131. Applicant submits that STURGESSION does not disclose each of the features of the present invention. For example, Applicant submits that STURGESSION does not disclose third outlet openings radially beyond the at least one second outlet opening composed of bores structured and arranged for forming a cooling liquid film layer, wherein the bores are arranged along a ring, which is coaxial to the first outlet opening and the at least one second outlet opening, as recited in claim 12. Additionally, Applicant submits that STURGESSION does not disclose the inner element further comprising third outlet openings composed of bores structured and arranged for forming a cooling liquid film layer, wherein the bores are arranged along a ring, which is coaxial to the first outlet opening and the at least one second outlet opening to surround the first outlet opening, as recited in claim 22.

No Disclosure of Third Outlet Openings Radially Beyond The At Least One Second Outlet Opening

Applicant submits that STURGESSION does not disclose third outlet openings radially beyond the at least one second outlet opening composed of bores structured and arranged for forming a cooling liquid film layer, wherein the bores are arranged along a ring, which is coaxial to the first outlet opening and the at least one second outlet opening, as recited in claim 12. STURGESSION discloses an air blast fuel atomizer. In addressing previously presented claim 12, the Examiner refers to Figure 7 of STURGESSION, which Applicant has reproduced below.



Specifically, the Examiner designated the centerbody 36 as the recited inner element with the first outlet opening and designated the primary shroud member 42 as the recited outer element having the at least one second outlet opening. Additionally, the Examiner designated fuel injection ports 80 as the recited third outlet openings.

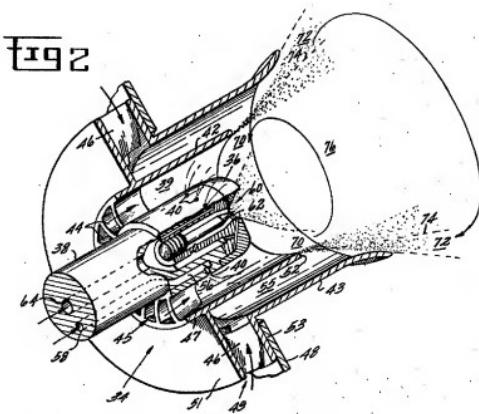
With these Examiner-designations in mind, Applicant respectfully submits STURGESS does not disclose third outlet openings radially beyond the at least one second outlet opening, as recited in claim 12. That is, as shown in Figure 7 of STURGESS, the Examiner-designated third outlet openings 80 are radially within the Examiner-designated at least one second outlet opening (between centerbody 36 and shroud 70) of the Examiner-designated outer element 70.

As such, for at least this reason, Applicant submits that STURGESS does not disclose each of the features of the claim 12, and does not anticipate the present invention. Accordingly, Applicant respectfully requests the rejection of claim 12 be withdrawn.

No Disclosure of Third Outlet Openings Arranged to Surround The First Outlet Opening

Applicant submits that STURGESSION does not disclose the inner element further comprising third outlet openings composed of bores structured and arranged for forming a cooling liquid film layer, wherein the bores are arranged along a ring, which is coaxial to the first outlet opening and the at least one second outlet opening to surround the first outlet opening, as recited in claim 22.

In addressing previously presented claim 22, the Examiner referred to Figure 2 of STURGESSION, which Applicant has reproduced below.



Specifically, in addressing previously presented claim 22, the Examiner designated the centerbody 36 as the recited inner element with the first outlet opening 60 and designated the primary shroud member 42 as the recited outer element having the at least one second outlet opening. Additionally, the Examiner designated fuel injection ports 40 as the recited third outlet openings.

With these Examiner-designations in mind, Applicant respectfully submits STURGESSION does not disclose third outlet openings composed of bores . . . wherein the bores are arranged along a ring, which is coaxial to the first outlet opening . . . to surround the first outlet opening, as recited in claim 22. That is, as shown in Figure 2 of STURGESSION, the Examiner-designated third outlet openings 40 do not surround the Examiner-designated first outlet opening 60. Rather, Applicant respectfully submits that the Examiner-designated third outlet openings 40 are axially offset from the Examiner-designated first outlet opening 60, so as to preclude a reasonable interpretation of STURGESSION as disclosing a surrounding of the later by the former. In contrast, with the present invention, for example as shown in Figure 5, the inner element further comprises third outlet openings composed of bores 16 structured and arranged for forming a cooling liquid film layer, wherein the bores 16 are arranged along a ring, which is coaxial to the first outlet opening and the at least one second outlet opening to surround the first outlet opening.

As such, for at least this reason, Applicant submits that STURGESSION does not disclose each of the features of the claim 22, and does not anticipate the present invention. Accordingly, Applicant respectfully requests the rejection of claim 22 be withdrawn.

Independent Claim 28

Independent claim 28 recites, in pertinent part:

. . . guiding fuel into the combustion chamber through a first outlet opening;
guiding fuel into the combustion chamber through a second outlet opening arranged coaxially with the first outlet opening; and
forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening.

Applicant submits that STURGESS does not disclose each of the features of the present invention. For example, Applicant submits that STURGESS does not disclose forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening, as recited in claim 28.

No Disclosure of Bores Arranged To Coaxially Surround The First Outlet Opening

In addressing claim 28, the Examiner designates element 60 as the recited first outlet opening and the fuel injection ports (40 or 80) as the recited bores. For the reasons articulated above with regard to claim 22, Applicant respectfully submits that STURGESS does not disclose bores arranged to coaxially surround the first outlet opening. That is, as shown in Figure 2 of STURGESS, the Examiner-designated third outlet openings 40 do not surround the Examiner-designated first outlet opening 60. Rather, Applicant respectfully submits that the Examiner-designated third outlet openings 40 are axially offset from the Examiner-designated first outlet opening 60, so as to preclude a reasonable interpretation of STURGESS as disclosing a surrounding of the later by the former. Additionally, as shown in Figure 7 of STURGESS, the Examiner-designated third outlet openings 80 do not surround the Examiner-designated first outlet opening 60. Rather, Applicant respectfully submits that the Examiner-designated third outlet openings 80 are axially offset from the Examiner-designated first outlet opening 60, so as to preclude a reasonable interpretation of STURGESS as disclosing a surrounding of the later by the former.

Thus, for at least these reasons, Applicant respectfully submits that STURGESSION does not disclose bores arranged to coaxially surround the first outlet opening, and does not anticipate the features of claim 28.

No Disclosure of Forming A Cooling Liquid Film Layer In The Combustion Chamber Through Bores

Additionally, Applicant submits STURGESSION does not disclose forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening. In addressing this feature of claim 28, the Examiner cites column 7, lines 1 – 4 of STURGESSION. Applicant has reproduced column 6, line 56 – column 7, line 4, which states (emphasis added):

In operation, liquid fuel is delivered to annular fuel manifold 80 through fuel conduit 58. Pressurized fuel flows from the fuel manifold 80 through fuel injection port 80 which is preferably formed so as to discharge fuel in a direction substantially tangential to the interior surface of the primary shroud member. The fuel injection port is also preferably slanted axially aft so as to impart a downstream velocity component to the fuel as it is ejected. The fuel flows from the port with initial tangential and axial velocity components which act to centrifuge the fuel so as to form a concentration of fuel on the interior surface of the primary shroud member 42. The concentrated fuel approaches a discrete swirling film travelling downstream along the interior surface of the primary shroud toward the circumferential lip 52.

Applicant submits that the above passage (and STURGESSION in its entirety) is silent with regard to the recited “forming a cooling liquid film layer in the combustion chamber.” That is, Applicant respectfully submits that STURGESSION does not disclose a method comprising forming a cooling liquid film layer in the combustion chamber through bores arranged to coaxially surround the first outlet opening. Instead, STURGESSION explicitly discloses that pressurized air is

used for cooling of the hollowbody 12. For example, STURGESS discloses at column 3, lines 40 – 46 that (emphasis added):

As will be understood, the passages 22 and 24 are adapted to deliver a flow of pressurized air from a suitable source, such as a compressor 28, into the combustor chamber 14 through suitable apertures or louvers 30 for cooling of the hollow body 12 and dilution of the gaseous products of combustion as is well known in the art.

In view of the above, Applicant respectfully submits that STURGESS does not disclose forming a cooling liquid film layer in the combustion chamber through bores, as recited in claim 28, and does not anticipate the present invention.

Accordingly, for at least these reasons, Applicant respectfully submits that STURGESS does not disclose each of the features of claim 28, and does not anticipate the present invention.

Dependent Claims 13 – 19, 21, 23 – 25, 27 and 29 – 32

Applicant respectfully submits that claims 13 – 19, 21, 23 – 25, 27 and 29 – 32 depend from respective allowable independent claims, and are allowable based upon the allowability of the independent claims, and because these claims recite additional subject matter to further define the instant invention.

Claims 19 and 25

Applicant submits that STURGESS does not disclose the features of claims 19 and 25. Moreover, Applicant submits that the Examiner did not address each of the features of claims 19 and 25, such that neither a complete action nor a clear record have been presented, as discussed further below.

Claims 19 and 25 recite, in pertinent part:

. . . further comprising component feed bores, wherein the bores and the component feed bores are arranged such that liquid jets exiting from the bores mix with liquid jets exiting from the component feed bores.

In addressing claims 19 and 25, the Examiner states, STURGESS “teaches component feed bores (bores for conduits 58) such that the component feed bores communicate with the bores.” As such, Applicant submits the Examiner did not address the features of claims 19 and 25. For example, the Examiner never addresses the recited “wherein the bores and the component feed bores are arranged such that liquid jets exiting from the bores mix with liquid jets exiting from the component feed bores.”

The Examiner is respectfully reminded of the guidance provided by MPEP § 707.07(f), which states:

In order to provide a complete application file history and to enhance the clarity of the prosecution history record, an examiner must provide clear explanations of all actions taken by the examiner during prosecution of an application.

Additionally, the Examiner is respectfully reminded of the guidance provided by MPEP § 2143.03, which states:

All words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Thus, for at least these reasons, Applicant respectfully submits that the Examiner has not presented a complete action and a clear record.

Additionally, Applicant submits that STURGESS does not disclose component feed bores, wherein the bores and the component feed bores are arranged such that liquid jets exiting from the bores mix with liquid jets exiting from the component feed bores. As noted above, the

Examiner designates bores 58 of STURGESS as the recited component feed bores. However, as shown in Figure 7, bores 58 are merely an upstream portion of the Examiner-designated bores 80. As such, Applicant respectfully submits that STURGESS cannot disclose component feed bores, wherein the bores and the component feed bores are arranged such that liquid jets exiting from the bores mix with liquid jets exiting from the component feed bores. That is, that liquid jets exiting from the bores 80 is the same liquid exiting from the upstream Examiner-designated component feed bores 58, such that the recited mixing cannot occur.

Thus, Applicant submits STURGESS does not disclose the features of claims 19 and 25, and does not anticipate the present invention. Accordingly for at least these reasons, Applicant requests the rejection of claims 19 and 25 be withdrawn.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 13 – 19, 21, 23 – 25, 27 and 29 – 32 and indicate claims 13 – 19, 21, 23 – 25, 27 and 29 – 32 are allowable.

Traversal of Rejection Under 35 U.S.C. § 103(a)

Applicant traverses the rejection of claims 20 and 26 under 35 U.S.C. § 103(a) as being unpatentable over STURGESS in view of U.S. Patent No. 5,113,647 issued to Shekelton [hereinafter “SHEKLETON”]. The rejection is respectfully traversed.

Applicant respectfully submits that claims 20 and 26 depend from respective allowable independent claims, and are allowable based upon the allowability of the respective independent claims, and because these claims recite additional subject matter to further define the instant invention.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner withdraw the rejection of claims 20 and 26 and indicate claims 20 and 26 are allowable.

New Claims

By the present amendment, Applicant has presented new claims 33 and 34 for the Examiner's consideration. Applicant respectfully submits that claims 33 and 34 depend from respective allowable independent claims, and are allowable based upon the allowability of the independent claims as explained above, and because these claims recite additional subject matter to further define the instant invention.

Accordingly, for at least these reasons, Applicant respectfully requests the Examiner indicate claims 33 and 34 as allowable.

Complete Action Not Provided

Applicant respectfully submits that the Examiner did not address each of the features of claims 19 and 25, as noted above. Thus, Applicant respectfully submits that the Examiner has not set forth a complete action or a clear record.

For this reason, Applicant submits that a clear issue was not developed between the Examiner and Applicant. More specifically, MPEP §706 states:

Before final rejection is in order a clear issue should be developed between the examiner and applicant. To bring the prosecution to as speedy conclusion as possible and at the same time to deal justly by both the applicant and the public, the invention as disclosed and claimed should be thoroughly searched in the first action and the references fully applied; and in reply to this action the applicant should amend with a view to avoiding all the grounds of rejection and objection.

Additionally, MPEP 706.07(a) notes:

Under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an

information disclosure statement filed during the period set forth in 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p). ...

Furthermore, a second or any subsequent action on the merits in any application ... will not be made final if it includes a rejection, on newly cited art, other than information submitted in an information disclosure statement filed under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17 (p), of any claim not amended by applicant or patent owner in spite of the fact that other claims may have been amended to require newly cited art.

Accordingly, Applicant respectfully requests that the Examiner address the untreated features of the claimed invention, such that a clear issue is developed between the Examiner and Applicant. Moreover, Applicant submits that the next action, which should clarify the record, should not be a final action.

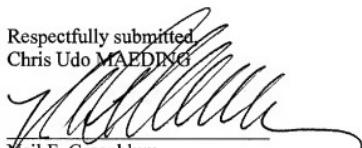
CONCLUSION

In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicant's invention, as recited in claims 12 – 34. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all of the claims therein are respectfully requested and now believed to be appropriate.

Should there be any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted
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